TELEDYNE, INC. ANNUAL REPORT

1968

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LETTER TO SHAREHOLDERS:

Nineteen hundred sixty-eight was the eighth consecutive year that Teledyne established record new highs in sales, net income, and earnings per share. Your company thus continued intact the uninterrupted series of steadily increasing earnings it has achieved each year since its organization in 1960. These sustained results reflect our purpose—sound and healthy growth in assets and earnings per share, on both a short-term and a long-term basis, with current gains providing the basis for long-term growth in the future.

Teledyne has been systematically organized around a plan designed to produce sustained growth, and its assets are continuously deployed and redeployed with the goal of growth in mind. Experience shows that new and emerging industries offer the most favorable opportunities for maximum business growth. At Teledyne these newer industries are usually based on advances in technology, and in their early stages of rapid growth they may involve substantial risk and often require the infusion of large amounts of capital. But Teledyne is organized as a family of businesses. In Teledyne certain new and rapidly expanding businesses which are essential to future growth are associated with a number of more established and stable businesses. The latter, while growing at a slower rate, throw off the capital that is required to sustain the expanding activities. This combination in a single corporation of a group of new and rapidly growing businesses with a group of more mature and stable businesses

is at the heart of Teledyne's strategy for growth.

During 1968 a step of relatively minor immediate significance, but of major importance for our future long-term growth, was Teledyne's acquisition of 52 percent of the stock of Unicoa Corporation. Unicoa, through its wholly-owned subsidiary, United Insurance Company of America, will assist in providing the greatly enlarged financial base that will be essential a few years in the future for maintenance at that time of our established pattern of growth.

Teledyne's current annual rate of cash flow amounts to some sixty million dollars, and that money is being reinvested in areas of our business that we consider most productive. Not included in cash flow are many additional millions invested each year in research and product development. Such research and development expenditures never appear as earnings, and are accordingly free of taxes. This is because the mature businesses which generate the money to support such expenditures are in the same corporation as the newer businesses which absorb the money.

These considerations illustrate the economic superiority of Teledyne's form of corporate organization to older and narrower structures. If effectively employed, our organizational form and method must surely contribute a substantial measure of support to our long-term objective of sound and steady growth.

George A Roberts　　Henry E. Singleton

George A. Roberts
President

Henry E. Singleton
Chairman of the Board of Directors

A marked characteristic of our expanding industrial economy is that energy consumption increases much more rapidly than the population. For example, in the past twenty years, the population of the United States has increased by about 30 percent while the use of energy has approximately doubled. While satisfying anticipated future energy requirements of our expanding industry at reasonable cost necessitates the exploitation of such new power sources as nuclear energy, petroleum products will remain essential for the foreseeable future to meet consumer and transportation-related demand. Thus, the continued development of more sophisticated exploration, extraction and distribution techniques for our current sources of energy, the fossil fuels, is mandatory.

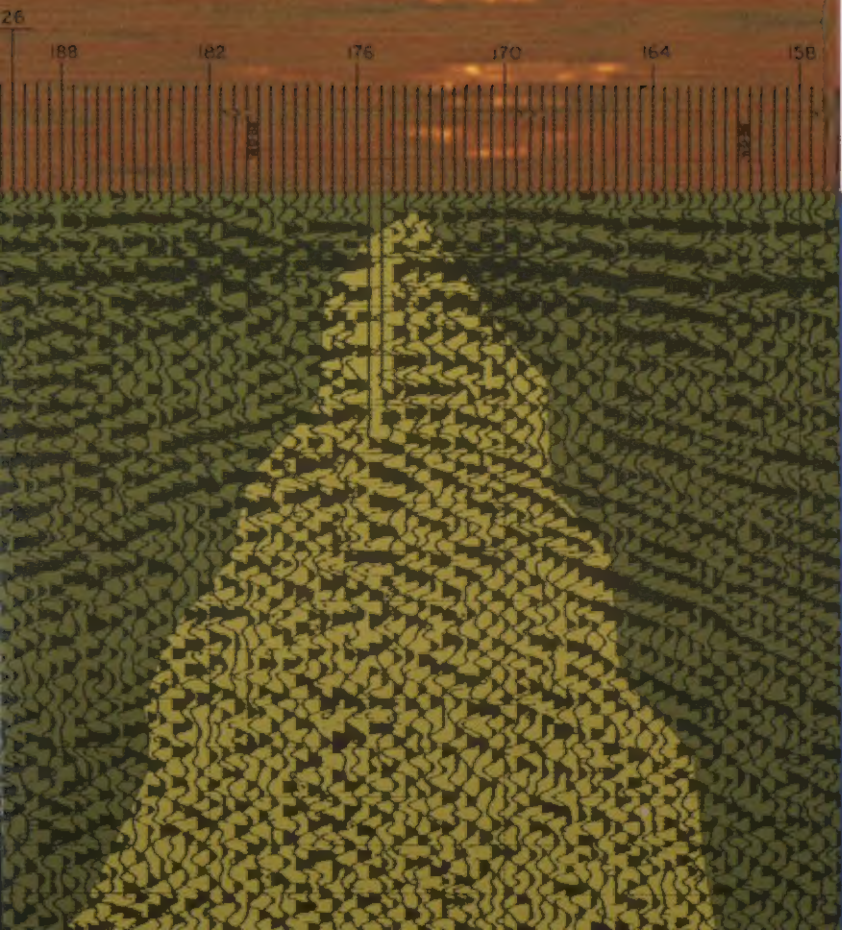
At the present time, petroleum and natural gas supply nearly three-quarters of all energy consumed. By 1980, demand for oil in the United States alone is expected to be 17 million barrels a day, one and a half times what we now produce. In terms of petroleum reserves this means that 80 billion barrels of new reserves must be found in the next 12 years, an amount equal to two-thirds of the oil discovered in this country since production first began. As our land reserves are used, an ever-increasing proportion of these new reserves will come from the offshore oil and gas deposits located in the thick sediments beneath the continental shelves.

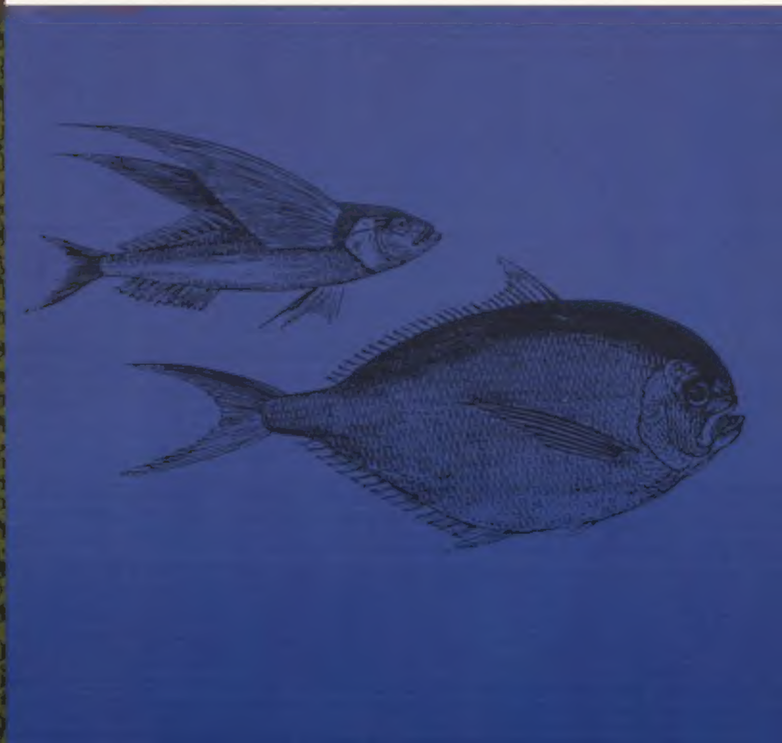
Teledyne's role in the search for oil is to explore, on a contract basis for the major oil companies, the geological and geophysical characteristics of potential onshore and offshore oil sites, to conduct for these same customers exploratory and production drilling operations, and to develop new techniques and equipment in support of these activities. With the increased dependence on offshore reserves, a variety of new equipment and techniques to solve the special problems of underwater oil location and extraction is being developed. Also, an increasing emphasis is being placed on the development and use of processing and monitoring equipment to provide optimum utilization of the known reserves.

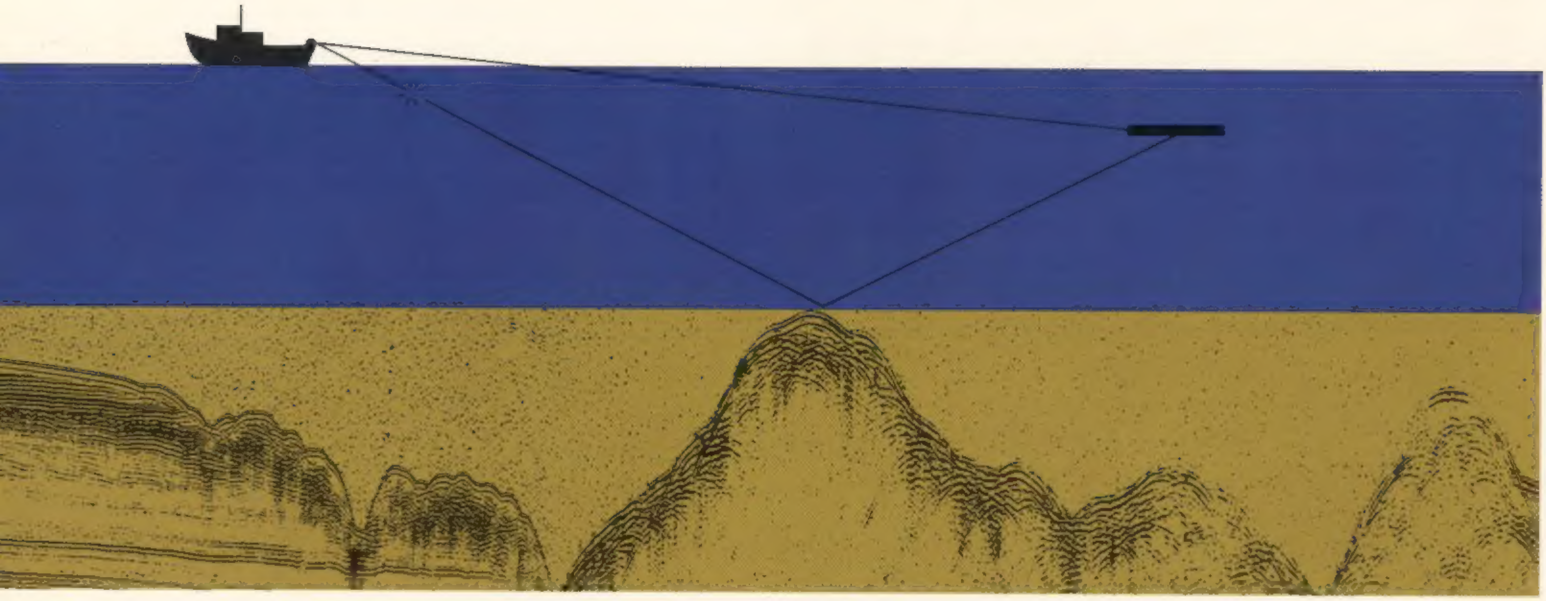
Initially, it was not especially difficult to find oil. In 1859, near Titusville, Pennsylvania, the first oil well drilled in the United States was located on top of a fissure that literally leaked oil. In 1901, Spindletop, the oil field that spawned the giant petroleum industry, was discovered because the configuration of its oil bearing salt domes was visible as surface topography.

By 1910, however, the discovery of oil had become much more difficult. The areas amenable to investigation by surface geology had been thoroughly explored, and it became necessary to infer the presence of oil by the study of subsurface geology. Pits were dug to lay open slices of subsurface strata. When drilling, core samples of the earth were taken at progessive depths, and wells logged for geophysical characteristics. Paleontologists effected a correlation of geological horizons between widely separated wells

OIL BENEATH THE SEA







through a study of microfossils.

By the mid-twenties, the practical depths of direct subsurface geological study had been reached, but development of new geophysical methods of finding oil indirectly from the surface made it worthwhile to examine both old prospects and potential new sites. The methods included magnetic and gravimetric anomaly detectors and refraction seismology, a means of converting the observed deflection of surface-generated signals by the subsurface strata into graphic data from which the domed structures that were potential oil reservoirs could be located. To satisfy the requirements for increased resolution at greater depths, this technique was replaced by reflection seismology, in which an energy pulse, usually a dynamite discharge, was reflected from the various rock layers, sensed by geophones arranged in a pattern on the surface, and transmitted by wire to a recorder that translated it into a wave-like pattern of lines. These patterns could then be studied by various data analysis techniques for formations indicative of oil traps.

This technique of reflection seismology has been the primary method of geophysical exploration since its introduction, with steady improvements in all elements of the process—the energy pulse source, the reflected signal detectors, the means of transmission to the central recorder, the recording techniques themselves and, probably most important, greatly refined data processing and analysis. Also, beginning about 1950, the methods and equipment originally developed for geophysical exploration on land were adapted to the problems peculiar to offshore exploration.

Basically, offshore exploration is accomplished by towing a long array of acoustic sensors behind a survey vessel which is also equipped with a means of injecting very large bursts of acoustic energy into the water. Periodically, the energy source is discharged; the resultant energy shock propagates through the sea water and penetrates the ocean floor beneath, down to depths of over 20,000 feet. At the interface between each layer of subsurface material, a minute portion of this energy is reflected, and propagates back up through the intervening layers and the sea above, where it is detected by the acoustic sensors. These detected signals are then recorded on tape for future analysis at onshore data processing centers, where a continuous geologic profile of the subsurface strata over which the ship passed is generated.

A limitation of early offshore exploration was the masking of the reflected signal by reverberation of the uncontrolled random-frequency signals created by the dynamite blast. In addition, it was extremly difficult to create a continuous profile of the sub-bottom geology in a reasonable time, since two to three minutes was a practical minimum between explosions because of the cumbersome handling problems. The alternatives were thus to

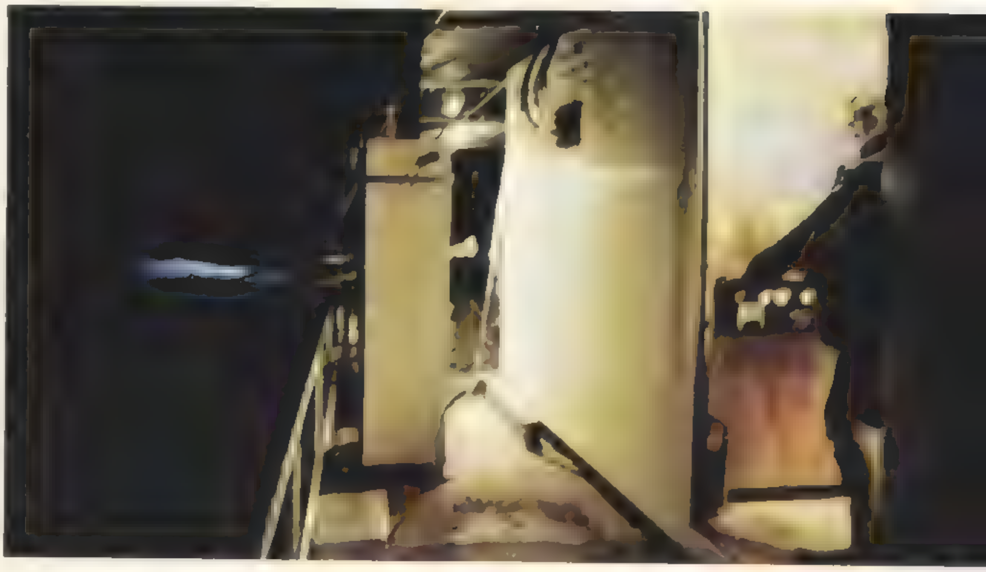
profile at speeds under three knots or risk missing valuable data. This, plus the cost, logistics and hazards of dynamite, spurred development of non-explosive controlled source mechanisms for marine use, such as compressed air, compressed gas mixtures, mechanical "boomer" techniques, and Teledyne's proprietary electric arc (SSP) and wire arc (WASSP) seismic section profiling systems. By the end of 1967, dynamite had been almost totally phased out of marine operations.

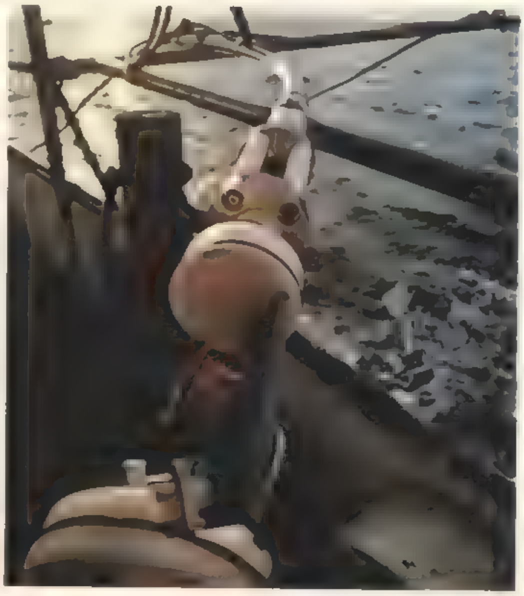
Another technique which has also been introduced to help eliminate the spurious signals which mask the wanted reflections is that of physically spacing the energy bursts more closely together so that there is considerable overlap in coverage, and thus reflections are received from each point on the subsurface boundaries from a number of angles. The seismic signal is then processed so that the wanted signals add up in phase to delineate the interfaces on the record. In the past year, Teledyne introduced a new multi-channel data sensor cable for marine use. With automatic depth control, the two-inch diameter cable contains six groups of 100 data sensors each and is 9000 feet long, so that when towed behind the survey vessel, the sensors are properly placed in relation to the reflected signal.

Over the past five years, the earlier methods of analog data reduction have been obsoleted by digital data processing, with data collected in analog form in the field converted to a digital record, which can then be processed automatically in high speed digital computing machinery using mathematically-complex digital correlation routines. A more recent advancement has been the development of techniques to acquire and store data gathered directly in digital form in the field. In addition to eliminating the need for data conversion, digital data acquisition results in substantially improved accuracy and resolution because of the greater dynamic range, or span of signal strengths, which the digital equipment accommodates.

During the past year, Teledyne completed a proprietary marine shipboard seismic digital data acquisition and recording system which includes the

A bubble forms in the water behind the survey vessel from the discharge of the electrical energy stored in the high voltage capacitor bank at the ship's rail.





In the Wire Arc Seismic Section Profiler (WASSP), fine wire is automatically advanced every few seconds between high voltage insulators from a spool to the arcing electrodes, where it is explosively vaporized by up to 200,000 joules of electrical energy.

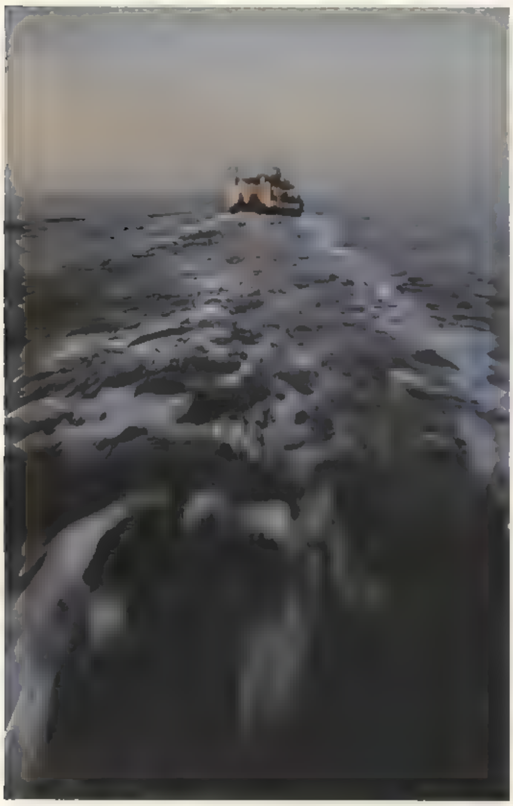
The analysis by high speed digital computers of geophysical data stored on magnetic tape has greatly enhanced the accuracy with which the subsurface structure may be determined.

WASSP signal source, the new multichannel sensor cable, and a new gain-ranging digital recorder. These more sensitive equipments and digital processing techniques allow the identification of sites which would otherwise go undetected. They also make possible re-examination in greater detail of sites whose potential oil content was too speculative, because of the coarser data from the earlier systems, to justify the expenses of exploratory drilling. With drilling costs offshore substantially higher than on land, valid data upon which to base drilling decisions are of premium value.

The value of the records depends in part, of course, on the ability of the exploration geophysicists and drilling crews to return to the exact desired points on the survey maps. This is accomplished by the use of a radio position location system, such as Teledyne's Raydist, accurate to approximately ten feet when the survey vessel is 250 miles out at sea.

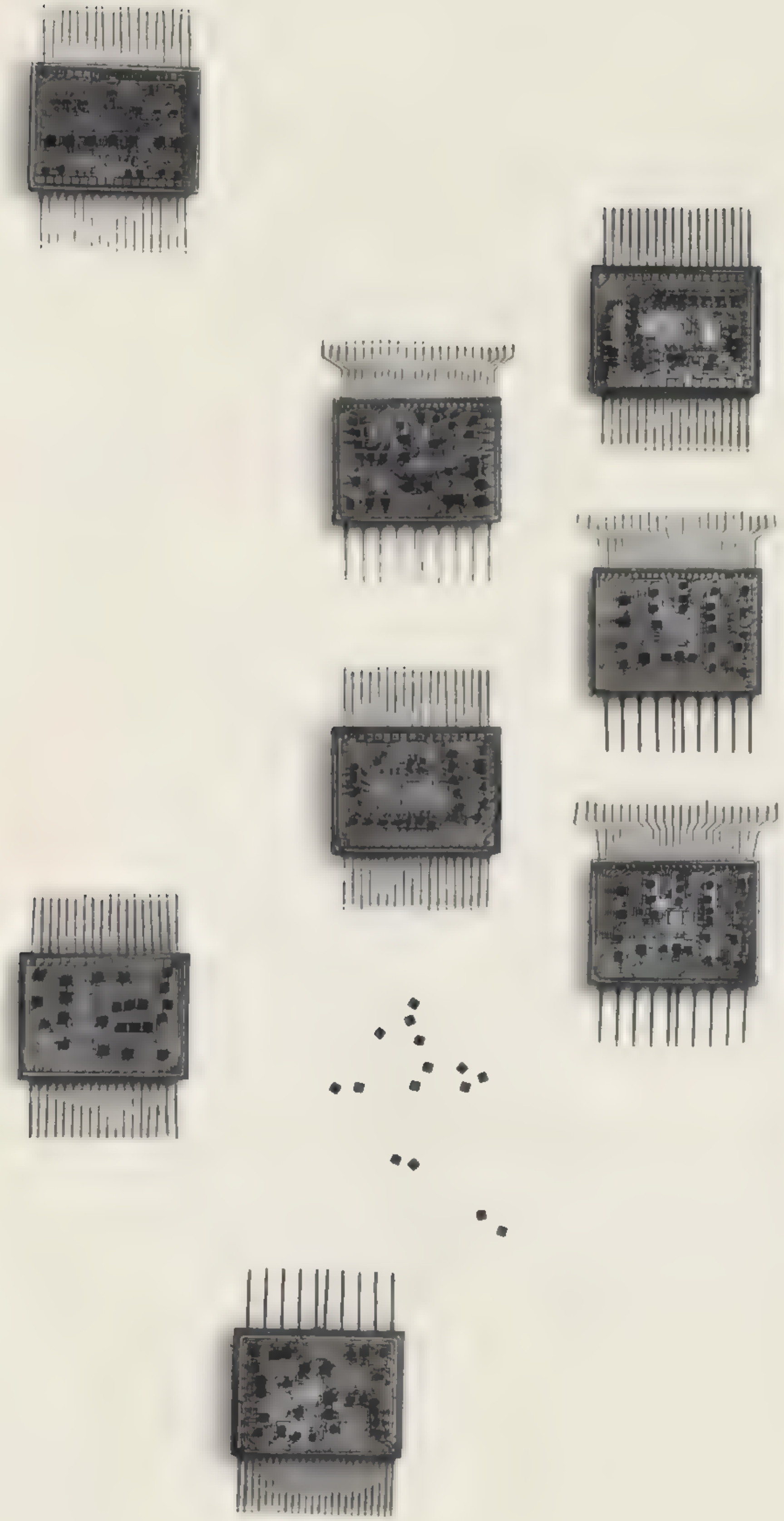
In the summer of 1967, Teledyne conducted two notable surveys with its electric-arc SSP system; continuous subbottom profiles were conducted across the Atlantic Ocean and around the circumference of the Mediterranean. This year those surveys were followed up by others along the east coast of Africa, the Indian Ocean, and across the South Pacific. These records, of great scientific and oceanographic interest, will prove valuable as the techniques of deep water exploration drilling are developed.

Originally, offshore drilling was merely an extension of onshore drilling, using essentially the same equipment and techniques, working from fixed platforms in a few feet of water. As the search progressed to deeper water, and as means developed to fabricate and precisely locate both movable and permanent drilling structures far out at sea, a whole new industry arose, specializing in rig positioning, deep water drilling, and transmission of oil and gas to the mainland. Participating in this phase of the oil acquisition process as well, Teledyne also provides complete contract drilling and pipe laying services to the oil industry using Teledyne-designed and manufactured drilling rigs, and supplies digital data handling systems, such as our new modular TC-200 series, to monitor and control operation of wells and transmission lines.



Over 40,000 miles of ocean were profiled with Teledyne electric-arc, air and gas energy systems in 1968, with seismic records taken beneath the ocean at depths of up to three miles.

When a potential source of offshore oil has been located, the exploratory drilling is usually done from movable rigs towed to the site.



Thousands of people cross the continent daily; public travel halfway around the world in a few hours will shortly become commonplace. Giant cargo aircraft able to carry the weight of fifty automobiles will soon deliver enormous quantities of materials anywhere in the world. Military aircraft flying at over twice the speed of sound strike concealed targets with pinpoint accuracy; helicopters precisely position battalions of troops on exact schedule, or rescue downed airmen from hostile territory. Geodetic mapping and hydrographic exploration of vast areas of land and sea by electronic means are done with surveyor's precision. Even manned space flights to the moon and planets, the current pinnacle of our technological achievement, will become routine over the next several years.

While advancements in aerodynamic design, in propulsion technology, and in super-strong temperature-resistant materials have been the key to this progress, of equal importance has been a parallel development in electronics for navigation, guidance and control. For the commercial aircraft, higher speeds and traffic densities demand increasingly precise scheduling and position-keeping to prevent collision; for the military aircraft, exact knowledge of position and velocity and lightning-fast trajectory calculations are essential. For spacecraft, the mathematical complexities of orbit and energy management calculations demand sophisticated, ultra-reliable attitude and acceleration sensors and computing equipment. Mapping and hydrographic surveying vehicles must know their precise position if the data gathered are to be meaningful.

Solving these problems requires sens-

Actual size microelectronic modular assemblies (MEMA)

ELECTRONIC NAVIGATORS FIND THE WAY

ing devices to measure vehicle acceleration, velocity or position, computing devices to derive the desired information from these data, and display and control devices to utilize this information. However, in contrast with the physical growth which has characterized progress in the engine and airframes, solutions in the electronic area have been manifested by the physical shrinkage of the equipment, stemming from a revolutionary change in the size, weight, power, reliability and cost of the basic electrical components from which they are constructed. For example, the primary electrical functions found in today's advanced navigation and position measurement systems could have been performed in principle by the electronic components available a quarter of a century ago. However, an electronic system of the complexity Teledyne is building for aircraft today, if reproduced in the vacuum tube technology of twenty-five years ago, would be substantially larger than the aircraft and take a sizable fraction of its engine power to operate it. Moreover, because of the inferior reliability of the individual components then available versus the very large number required, statistically it would fail every few minutes.

The practicability of these complex airborne and space electronic systems came with the development of the transistor twenty years ago and the introduction of silicon planar solid state techniques a decade later. Unlike previous semiconductor devices, the planar transistor was flat, formed on a tiny spot diffused into the surface of a paper-thin circular silicon wafer. Because of the flat surface, adjacent transistors or diodes could be

Destined to yield over 500,000 integrated circuits, a single crystal of silicon two inches in diameter and eight inches long is formed as the silicon solidifies when slowly pulled from a molten pool.

interconnected by thin film deposition techniques to perform more complex functions. Thus the planar process, which has been continually refined since its introduction into the semiconductor field, provided the fundamental technology from which microelectronic integrated circuitry has been developed.

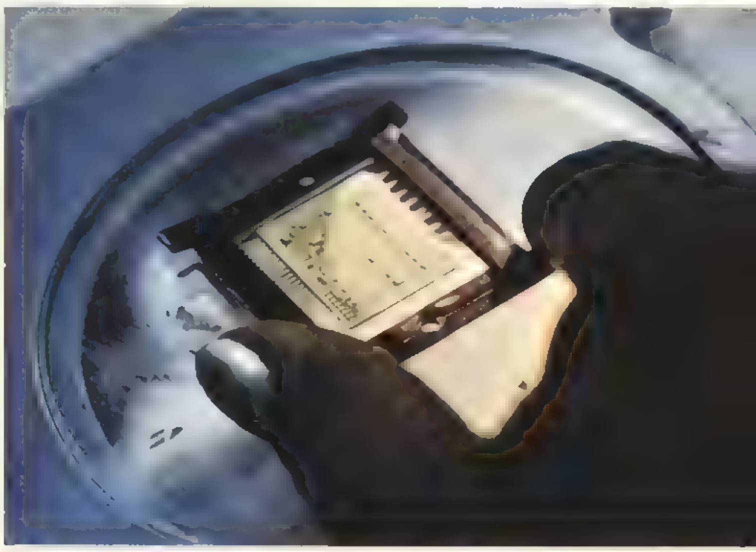
Here then was the breakthrough required to make equipments and systems sufficiently powerful to satisfy critical aircraft and space vehicle requirements within practical size and weight limitations; a circuit containing perhaps fifty individual electrical components could now be fabricated as a single element approximately the size of the head of a pin. Thousands of these complicated microscopic structures are built up on a wafer by repeated cycles of oxidation, photographic exposure, etching, and diffusion; then separated into individual circuit chips by cutting up the wafer.

The significant point of this process is that it is inherently photographic and chemical, and thus lends itself to batch processing, where very large numbers of identical devices are made simultaneously and economically, with perhaps a hundred-fold decrease in cost over using discrete components, and a corresponding increase in reliability because the entire device exists in a single monolithic structure sealed from all contamination. These two dramatic improvements have jointly created vast new electronic markets in scientific, military, industrial and consumer fields, so that the continually decreasing prices of individual integrated circuits have been more than offset by burgeoning demand. For example, total sales of integrated circuits through 1968, by Teledyne and all other manufacturers, are in excess of 200,000,000 units. The number of units sold has at least doubled every year for the past decade.

Historically, integrated circuits have been packaged singly, with individual circuits interconnected in a conventional fashion by the electronics manufacturer to perform the required function, just as discrete components were formerly handled. The result of this approach was that the equipment size and weight was determined principally by the requirements for connectors and wiring between circuits, and the mechanical structure to hold them in the quantities used. Packaging efficiencies of the order of .01%, the ratio of the space actually occupied by the silicon performing the electronic functions to the total volume of the equipment, were typical. Moreover, as integrated circuits became more powerful, performing more complex functions within a single chip, larger containers were necessary, not to hold the device but rather to allow space to bring additional electrical leads out of the package.

Foreseeing this difficulty, several years ago Teledyne commenced development of the microelectronic modular assembly, or MEMA, a hermetically-sealed package of postage stamp size containing some

Individual wafers sawed from a silicon crystal stand on edge in quartz containers or "boats" which will hold them in the diffusion furnaces.



A MEMA with individual integrated circuit chips attached to the ceramic substrate is held in a handling fixture to prevent damage in the fabrication process prior to sealing.

A logic module, containing twenty-four MEMAs mounted on submodule boards, is inserted into an airborne computer during assembly.

Final production acceptance testing of the three units comprising the CH-46 helicopter computer system is performed on semi-automatic test consoles.

twenty-five integrated circuits interconnected as required to perform a major logical task. With the majority of the interconnections made within the MEMA, the total number of external connections are greatly reduced; conversely, the increased size of the MEMA allows the requisite space for the additional leads required to interconnect the more complex operations performed within adjacent MEMAs. Being produced in large quantity for equipments in production at Teledyne and to fill orders from other manufacturers, the MEMA permits a hundred-fold increase in packaging efficiency over individual integrated circuits, and further reliability and cost advantages. Most importantly, because of its size and increased number of leads, the MEMA package is compatible with medium and large scale array integration (MSI and LSI), where more complicated functions are combined within an individual circuit chip. Thus, the use of the MEMA forestalls equipment design obsolescence, since MSI and ultimately LSI circuits can be used within the MEMA at any time economic or reliability considerations may dictate, without external change.

Because of the nature of the circuits involved, integrated circuits have made the greatest impact thus far on digital computing and data handling devices; augmenting the benefits of integrated circuits with the MEMA has been particularly dramatic. For example, Teledyne is producing in quantity an airborne digital computer which, with 16,384 words of storage, occupies a volume of less than one quarter of a cubic foot. A second generation computer, again based upon the MEMA but of more advanced logical organization and longer digital word length for greater speed and accuracy, is under development for NASA for use in the Centaur upper stage vehicle.

For the most technically-demanding applications, typically high speed military aircraft, the availability of powerful computing machinery of small size has engendered a new class of hybrid navigation and guidance systems. Typified by Teledyne's doppler-inertial-Loran navigation system, such systems mix the outputs of a number of different types of navigation

sensors, each measuring a different quantity and thus having different accuracy characteristics, in an optimal filter. This optimal filtering, a process of mathematical computation, results in a system accuracy which is greater than that of any individual component providing the basic input data. More importantly, when such complementary sensors are used, the performance of any one need not be uniformly superior in all aspects, allowing a further decrease in individual equipment cost and generally greater reliability.

A second effect of increasingly powerful airborne computers, often modular machines such as those which Teledyne is building for the Marine Corps CH-46 and CH-53 helicopters, is the automation and integration through the computer of a number of associated mission functions. For example, the computers being produced for the Army AH-56 Cheyenne helicopter perform the calculations and generate the control signals required for automatic flight control, automatic terrain following, automatic formation flight, and the aiming and firing of the weapons, in addition to the basic aircraft navigation, air data, and display computations.

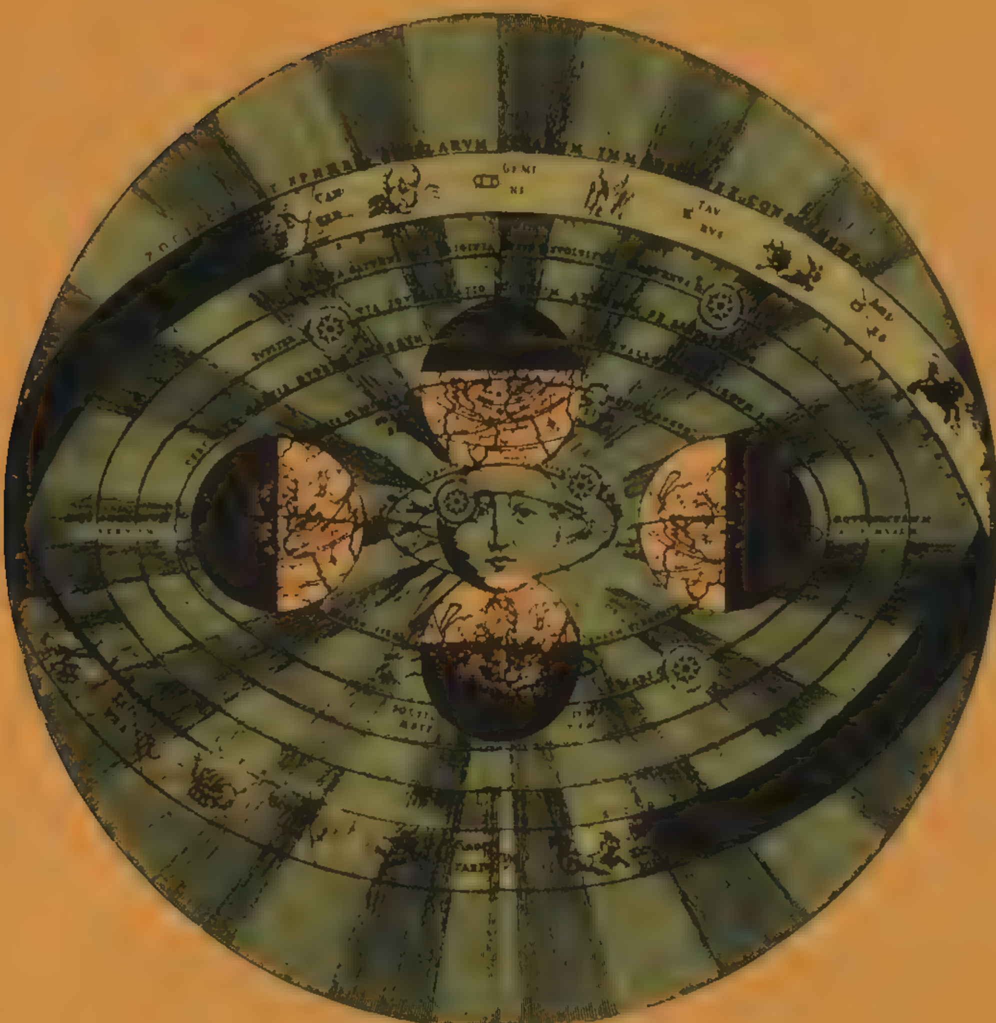
While the highest performance applications may demand hybrid integrated navigation and avionic systems with optimal filtering, many other applications are met quite adequately by one or two sensors, with less complex computation. Here again, the impact of the MEMA has been of great significance. Our inertial navigator is the smallest yet produced principally because of the ability to locate MEMA electronics directly within the inertial instruments. Our three-pound Loran C/D receiver is similarly the smallest available by a considerable margin, and operates on a new principle known as "hard limiting," to provide markedly superior performance in both airborne and surface applications. Demonstrated to the Air Force in engineering form in 1967, orders were received during the past year for field units for evaluation. Loran is of great interest in both commercial and military applications, since it directly measures position to an accuracy of a few hundred yards by receiving signals from transmitting stations up to perhaps 1500 miles away. Again, a digital computer is frequently used in conjunction with a Loran set, to automatically convert the Loran hyperbolic coordinates into latitude and longitude or grid position. Additionally, Teledyne is investigating under a separate Air Force contract a promising proprietary method involving advanced data processing techniques to increase by a substantial factor Loran accuracy currently obtainable.

The trend in navigation and guidance is thus steadily diminishing equipment size and cost-to-performance ratio, but increasing total profitability because of a rapidly expanding market. Systems of the class noted above will constitute the bulk of the near-term navigation market; they will be joined in the next decade by satellite navigation systems, whereby location on the earth can be accurately determined by the observation of signals from satellites whose position is known to great precision. During the past year, Teledyne participated in the first major study effort sponsored by the Air Force to define such a system in detail. By virtue of a technologically-advanced position in the three key areas of MEMA micro-electronics packaging, digital computing techniques and sensor technology, Teledyne looks forward to increasing participation in the broad field of navigation and control.

Equipment components of the Integrated Helicopter Avionics System (IHAS) are visible in one of the electronics compartments in a CH-53 helicopter.

REVIEW

1968



World-wide naval communications centers, the computer and telecommunication stock transaction network of a major brokerage firm, and a major electrical power cooperative are among those benefiting from new Teledyne solid-state uninterruptable power systems. Should the regular incoming power be interrupted, the systems, rated to handle up to 1000 KVA, instantaneously provide alternate power from standby batteries and diesel generators for sustained emergency operation of critical equipment.

A surveyor's transit that incorporates an electronic encoder to allow the digital readout of angular settings is under development. The digital output can interface directly with paper or magnetic tape, numeric displays, or telemetry equipment for transmission to a central computer for data processing. The transit is the first of a new generation of surveying instruments designed to obtain, store and transmit angular information without transcription from field notebooks.

The first machines for the roll-finishing of transmission pinion gears are now in use by a leading automobile manufacturer who plans to produce all of its automotive transmission gears using the process. The new machines, considered in automotive circles to be a substantial technical achievement, yield an improved product as well as reduced production costs.

A pair of 2,500,000 pound welding positioners, the world's largest, were designed and built to customer's specifications for use in fabricating nuclear reactor heads. Such specialized positioning, manipulating, and fixturing equipment produced by Teledyne makes fabrication of extra large nuclear vessels possible.

In both commercial and military aircraft, systems for in-flight monitoring of aircraft, engine and equipment performance, such as Teledyne's airborne integrated data system, are becoming increasingly appealing. Rapidly sampling large numbers of performance parameters and either comparing them in a digital computer in flight for conformity with predetermined standards or recording them for later analysis, such systems offer the safety advantage of detecting incipient failures, and the economic advantage of scheduling maintenance on the basis of predictable performance trends and thus actual need, rather than at relatively arbitrary fixed time intervals.

Actual touchdown of airplanes can now be observed in the FAA control towers at the Los Angeles International Airport when poor atmospheric conditions limit visibility. A Teledyne closed circuit television system provides this capability, as well as the surveillance of airport automobile traffic to aid traffic directors in reducing congestion.

Packard Bell offers a full line of black & white and color television, television-stereo combinations, and stereo consoles and modular units. Distribution has been expanded to the Midwest and East from its original West Coast base in a program designed to increase national sales. Most sales are to consumers for home use, but purchases for commercial use are an increasing factor.

Studies conducted by Teledyne for the nuclear power industry and the government validate a new technique for analyzing the response of structures to vibrations. The analysis of accelerograph data gathered at test installations showed that the normal ambient environment, such as that caused by traffic, construction, and other low level disturbances, provided sufficient energy to allow determination of the vibrational response of structures, and thus predict their ability to withstand major earth shocks. Previously it was necessary to wait for an earth tremor or to shake the building by artificial means.

In the course of its land seismograph operations for oil exploration, Teledyne conducted surveys in heavy jungle areas of British Honduras. Unexpected discoveries: several Mayan pyramids, one reportedly the tallest in the country.

Teledyne is a leading manufacturer of fuel injection tubing and fabricated diesel fuel lines. These are small pressure tubes for direct installation on the engine where they carry fuel from the pump under high pressure into the cylinders. Bends of the fuel lines are made on numerically controlled machines produced by Teledyne.

The world's largest tanker, the 312,000-ton Universe Ireland, is one of five ships that have been instrumented in a major study of stresses on large ships undertaken by the American Bureau of Shipping. Transducers measure the longitudinal bending stress to determine the extent of hogging and sagging stresses caused by particular combinations of ship speed and wave period, direction, height and length. Teledyne cooperated with the Bureau in programming and installing the instruments, and now collects and evaluates the data.

A numerically-controlled machine developed by Teledyne can bend 80-foot lengths of 3″ outside diameter, ½″ thick wall boiler tubing into almost any configuration; the digital control makes it possible to computerize bend data for higher production. Boiler manufacturers will benefit through the elimination of much of the handling and testing costs inherent with using short tube lengths.

Developed especially for the big jets, such as the 747, DC-10, and L-1011, a new passenger loading system will permit faster and easier aircraft loading and make more efficient use of present terminal facilities. The over-the-wing system saves ramp space, permits passengers to enter or leave through as many as three doors simultaneously and also makes it possible to load two DC-8, 707 or similar size airplanes at the same time through the same gate.

Teledyne continues to be a large supplier of hydraulic actuators and valves for fixed wing aircraft, helicopters and industrial uses. New developments include high capacity solenoid control valves for industrial electric power generating gas turbines; a high torque nose wheel steering system for the EA6B aircraft; and a rapid traverse and feed valve package for the machine tool industry.

Installed in New York City, a Teledyne system to detect and analyze air pollutants is the forerunner of similar systems needed in urban centers throughout the United States. Concentration of air contaminants and the meteorological conditions that influence their distribution are measured at unattended stations throughout the city, and the data transmitted to a computer controlled central station where it is automatically tabulated and presented on a display map.

Acoustic Research expanded its line of speaker systems by adding the AR-5. The AR-5 is a three-way system incorporating the hemispherical speakers of the much acclaimed AR-3A which provide uniquely accurate mid-range and high frequency reproduction. The bass of the AR-5 is produced by a new 10 inch woofer which incorporates some recent advances in materials technology. For example, the woofer is molded by a new low-vacuum process developed for AR which reduces the tendency to coloration heard in conventional paper or polystyrene cones.

The latest semiconductor mass production and handling techniques have been combined to produce "Micro Pack," a new transfer-molded transistor. Shown in contrast to a conventional transistor, it represents the smallest packaged transistor available. Small enough to fit into a hybrid circuit, it permits the equipment manufacturer to take full advantage of in-house hybrid circuit assembly without requiring the equipment and skill need to handle unpackaged transistor chips.

Teledyne eight-kilowatt traveling-wave tubes were put into operation in commercial communication satellite transmitting stations in the Philippines and Chile. Both stations transmit television and voice channels via the COMSAT Corporation Intelsat series of satellites.

Development began on a portable breath analyzer to be worn by astronauts when conducting experiments on the surface of the moon. The program involves miniaturization of a mass spectrometer and vacuum pump so that the battery-powered unit can fit within the helmet. In operation, information concerning the change of oxygen, nitrogen, carbon dioxide, and water vapor will be monitored and telemetered to Earth to anticipate physiological deficiencies which are developing and could become astronaut safety hazards.

A new die steel was developed for tools, dies and components where long production runs require a steel with maximum toughness. The "Vasco Die" holds true to its die and shape after hardening due to its balanced chemistry. A new matrix steel has also been developed for roll forming dies in the production of gears. Production figures for this material indicate a production improvement by a factor of four over the grades usually supplied for these applications.

A new "net oil computer" that determines the water and sediment content of the crude oil stream as it is pumped from the wells has been developed. Using digital integrated circuits, the computer facilitates precise control of oil distribution and the determination of proper royalty allocation when the products from several leases are commingled.

Over the past several years, Teledyne has pursued the development of permanent coupling devices for aircraft hydraulic systems. Now fully developed, the fittings make use of a brazing technique to replace the conventional screw-on method of joining sections of hydraulic line. As a result of this work, fittings and the associated production tooling is being produced for the DC-10 jet transport—the first commercial aircraft to use permanent fluid line fittings. With over 2,000 of the fittings used on each DC-10 the new technique will improve reliability and save about 365 pounds.

Radioisotope generators, such as the SNAP-19 (Space Nuclear Auxiliary Power) series powering the orbiting Nimbus-B weather satellite, are also used in the Antarctic, under the sea, on offshore oil wells, and for floating weather stations in the Gulf of Mexico. Capable of unattended operation for five years, Teledyne's radioisotope generators are self-contained thermoelectric systems for transforming heat energy developed by a radioisotope source directly into electrical energy in the 3 to 1000 watt power range.

Fifty-seven Teledyne motor driven switches are used for power transfer and systems control functions on the Apollo-Saturn V vehicle. Thirty-six of these are in the service and command modules of the Apollo spacecraft. An additional 108 mechanically actuated switches are in the launch tower for event sensing. Other space vehicles with Teledyne switches include Centaur, Surveyor, Agena, Bios, Nimbus B, Burner II and the MOL, as well as the Titan and Minuteman series of missiles.

A new on-board digital magnetic tape recording system has been developed for railroad use to record speed, acceleration, braking and throttle action during the train run. This information, processed at a data reduction center to a form suitable for analysis, will aid in improving train operations.

Radiant-heated reverbatory furnaces that have a melting capacity of 12,000 pounds of aluminum an hour have been developed and installed for mass production die casting. The precision cast components we manufacture include sprockets for automobile timing chains and light weight forms for office equipment, power tools, optical and industrial instruments, defense products and home appliances.

Teledyne will produce over 110 miles of track to enable window washers to negotiate the twin buildings of The World Trade Center being built in New York.

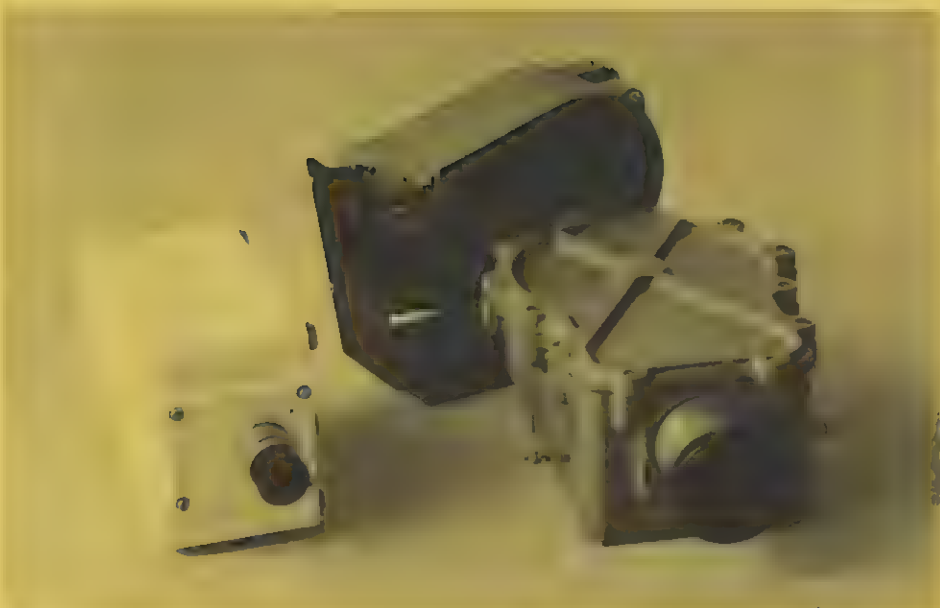
Using advanced aerial geodetic techniques, analytical aerotriangulation and stereo plotting, Teledyne has surveyed over sixteen thousand square kilometers in Thailand and Laos. A part of the U.S. Aid Pa Mong project, it is one of the largest mapping projects ever undertaken by a private contractor.

The first experimental geophysical device that the astronauts will install on the moon is a Teledyne seismometer, designed to detect and radio to earth information about both the moon's internal seismic activity and the effects of meteorites striking the moon's surface.

A UHF transmitter open to the vacuum of outer space, rather than shielded by the normal pressurized container, is functioning perfectly in the orbiting ESSA-7 weather satellite launched in August, and is also scheduled for use in forthcoming versions of the Nimbus and Tiros series. Since leakage of pressurized cases is one of the more common causes of failure, elimination of this potential difficulty significantly increases overall reliability.

The Navy's new Deep Submergence Rescue Vessel (DSRV) is designed to operate in depths of thirty-five hundred feet to rescue crews of disabled submarines. A linear actuator developed by Teledyne is used to position the boom for a sonar device used in the DSRV to locate the docking surface on the submarine. A second actuator then precisely controls the movement of the haul down winch used to attach the rescue vessel to the submarine.

New methods have been developed to produce thin metal foil for a variety of applications, particularly for the aerospace and electronic industries. A technique now makes it possible to slit and oscillate-wind titanium and stainless steel micro-foil in widths as narrow as .040 inch. Rolling and processing titanium into foil as thin as .0003 inch, one-fifteenth of the thickness of this page, is also being done on production equipment.



The DBM-8 camera, center, recorded John Glenn during his history-making Mercury flight. Model DBM-3, left, has been one of the workhorse cameras at Cape Kennedy for many years. This camera, mounted in a sealed capsule on board the Saturn first stage, records booster separation and is then ejected into the ocean and recovered. As many as 80 similar cameras are positioned at various locations on the launch pad to record the Saturn lift-off at close range. The DBM-10M1, right, was developed specifically for the Apollo program. It was used in initial unmanned flights of the Apollo capsule where it recorded flight instruments and the re-entry trail through the capsule window.

A new automated powder preparation facility for processing oxide into high quality tungsten carbide powder has gone into operation in Pennsylvania. The plant includes a huge rotary reduction furnace and the first continuous carburizing furnace in the industry. Tungsten carbides provide an extremely hard, wear resistant surface used in applications ranging from precision industrial cutting tools to studs for snow tires.

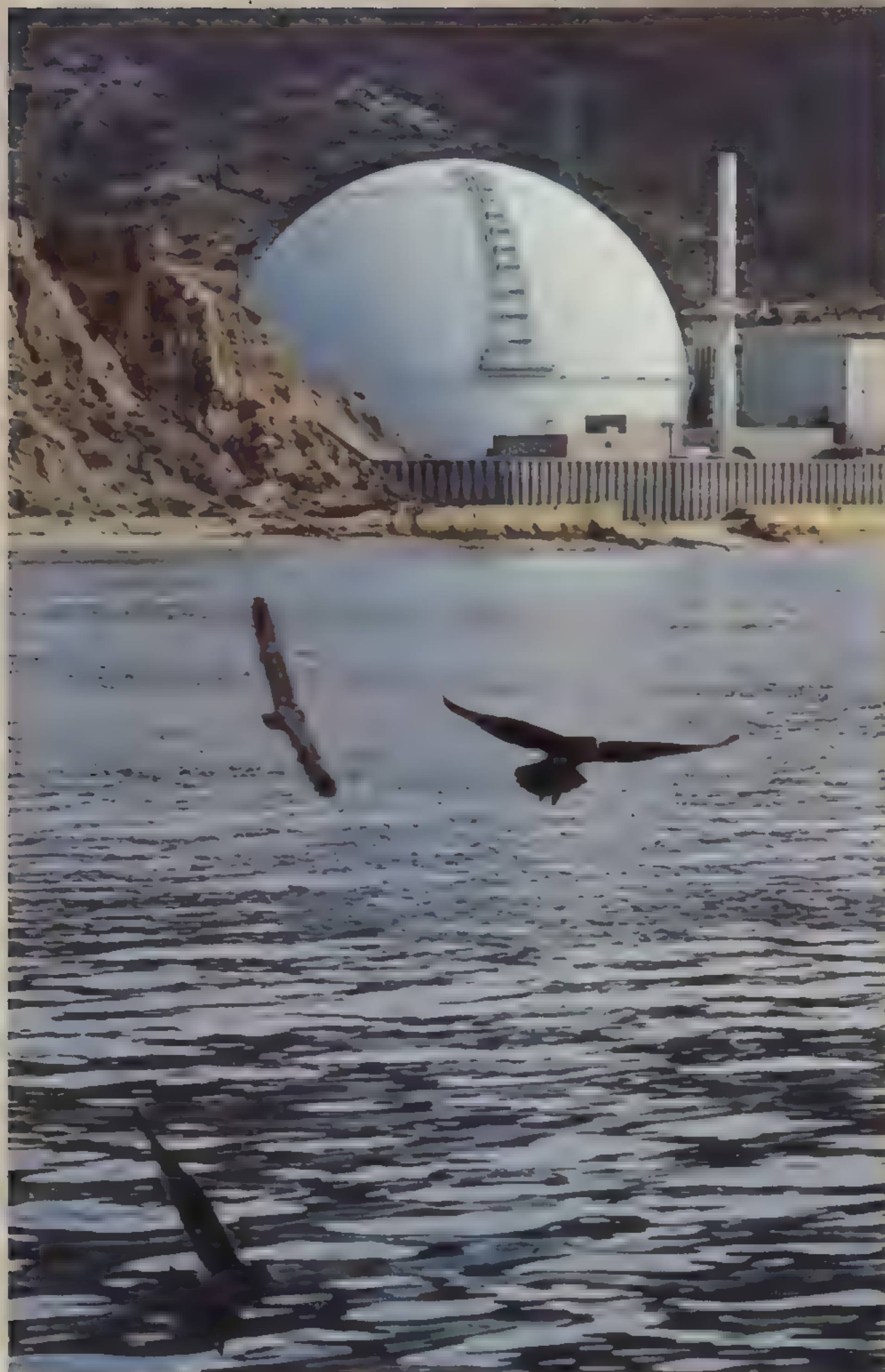
An automatic toothbrush has been introduced that attaches to the WATER PIK Oral Hygiene Appliance and uses its pulsating water as the power source to give it 1200 brush strokes per minute. The same pulsating jet action is used in a new Medical Irrigator, specifically designed for professional use. Introduced at the American Medical Association national meeting, the Irrigator was designed for certain ear treatments.

Since the beginning of its production life, the F-4 Phantom Jet has had in the front cockpit a Teledyne angle-of-attack indicator, which shows the angle of air flow over the aircraft wings. The Air Force has since determined it worthwhile for both pilots to have this information, so the indicator is now being retrofitted into the rear cockpit as well.

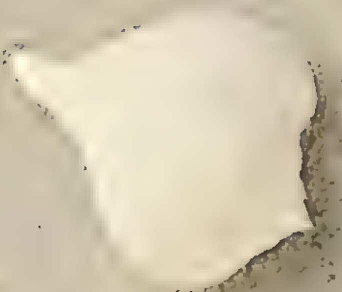
A number of new linear integrated circuits have been introduced, including a series of voltage regulators to facilitate regulation on individual circuit boards. New hybrid circuits include a micropowered FET operational amplifier and a family of variable frequency oscillators. In associated instrumentation activities, a tester to automatically measure integrated circuit operational amplifier parameters was introduced.

Teledyne has developed new differentially heat treated cast steel rolling mill rolls, and a new heat treating technique to give a combination of high toughness and spalling or chipping resistance on the surface of very large forged steel sleeves.

Teledyne has established itself as one of the leaders in the manufacture of diazo microimaging materials. The product line includes materials designed for such varied applications as high production distribution films, high density masters, multiple generation printing, and for prolonged film storage.



FROM SAND TO THE REACTOR



With the laboratory demonstration by Enrico Fermi and his associates in 1939 of the feasibility of a sustained nuclear fission reaction, man entered an era of power generation without meaningful limit. But like most other fundamental scientific discoveries, its useful application demanded not only the results of the particle physicists, but the development of the engineering technology and materials for its practical utilization as well. One such material is zirconium, the ninth most abundant element in the earth's crust, and found principally in beach sands as the mineral zircon. It is an interesting coincidence that uranium, the fissionable fuel used to generate nuclear energy, and zirconium, the preferred structural element for holding the uranium within the nuclear reactor core, were discovered by the same man, Klaproth, in the same year, 1789.

With the world's exponentially increasing industrialization and corresponding consumption of power, the availability of nuclear energy is timely. All other energy sources now in use are limited: our established coal resources will be depleted in about four centuries at the present rate of consumption; oil and natural gas reserves, while being continually expanded by new discoveries and better extraction methods, must ultimately be exhausted; even hydroelectric power is limited by climatic conditions determining rainfall.

As would be expected in a highly indus-

Crushed zirconium sponge is formed under high pressure into an 11-inch diameter slug for further processing.

Beach sand is poured into a giant electric furnace in the first of twenty steps in the production process that will yield zirconium.

trialized nation, the biggest portion of the energy expended is for stationary uses, operating our factories and heating and lighting our cities. As a result, energy consumption in the form of electrical power has increased at a particularly rapid rate, doubling every ten years and predicted to grow by a factor of six by the end of the century, with half provided by nuclear power generators.

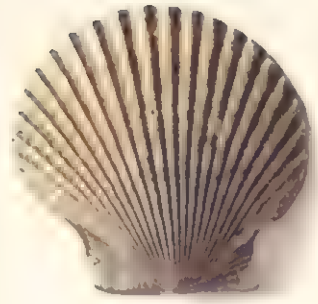
Both the conventional power plant and the nuclear power station use a heat source to produce steam. The conventional power plant merely burns a fossil fuel, such as coal or natural gas, while the nuclear plant uses a nuclear thermal reactor which generates heat by the fission of uranium atoms to boil the water. Neutrons hitting the nucleus of a uranium atom split the nucleus into two or more parts, liberating tremendous energy and releasing other neutrons to continue the process in a chain reaction. The high velocity of the neutrons is reduced by a moderator to obtain the maximum number of collisions with other fuel atoms.

The uranium fuel is made in the form of pellets; they are contained in long thin-walled sealed zirconium tubes which may be round, square or hexagonal in cross section, depending on reactor design. A number of these fuel rods are bundled together in a cluster forming channels of up to 25 square inches and 10 feet long. The coolant water is pumped through the reactor core around the fuel rods and is transformed into steam by the heat from the thermal neutron chain reaction. The chain reaction and thus the heat it generates can be regulated by moving control rods, made of materials which absorb large quantities of neutrons, into or out of the reactor core.

For optimum reactor efficiency and control, reactor core materials with special properties, stable in the reactor environment for long periods without maintenance, are needed. Control rod materials must have a high neutron cross-section to absorb as many neutrons as possible. Conversely, to allow maximum utilization of the fuel and generation of heat, the material used for fuel rods, channels, and other structural components located where the chain reaction takes place, must have a low neutron cross-section to be transparent to thermal neutrons and be compatible with the uranium dioxide it contacts. For the latter case, four metals have the necessary transparency to thermal neutrons: zirconium, aluminum, magnesium and beryllium. However, only zirconium has sufficient resistance to high temperature corrosion for use in today's water cooled reactors.

Two significant research developments approximately 20 years ago qualified zirconium for consideration as a nuclear reactor material. These were the discovery that zirconium was transparent to the thermal neutrons when the 1% to 5% hafnium impurities occurring in zircon sands were removed, and the development by W. J. Kroll of a method to economically produce ductile zirconium on a large scale. The development of Kroll or "sponge" zirconium, so termed because of its texture, marked the beginning of volume production of the metal.

Teledyne's activities in the zirconium field began in 1956 when Wah Chang, now a Teledyne company, started producing zirconium for the AEC in Albany, Oregon, to satisfy government needs. With the growth of the private nuclear power industry, Teledyne has subsequently developed its Wah Chang Albany operation into a fully integrated 80-acre zirconium production facility which is the world's



A one ton, 12 foot long electrode formed by welding sponge slugs together, is lowered into a vacuum arc furnace to be melted for further purification. The intense heat of the furnace and the uniformity of the arc are monitored at a control console.

Finished zirconium bars or forgings are immersed in an ultrasonically-activated fluid to detect any minute structural defects.

largest producer of finished zirconium metal and alloys. These materials are supplied in sheet, bar, rod, foil, tube, wire, powder and forged shapes to the nuclear, chemical, and aerospace industries.

The production process commences with the separation of selected beach sand with high zirconium content into its two principal mineral constituents: rutile, a titanium ore, and zircon, a light brown crystal consisting primarily of zirconium orthosilicate ($ZrSiO_4$) and its associated hafnium and other impurities. An alternate ore is baddeleyite or zirconium dioxide; because of its very reactive nature, zirconium is found only in the chemically combined state, rather than in an elemental form. Twenty complex steps are involved in transforming these minerals to finished reactor grade zirconium or zirconium alloys, but they can be grouped into chemical and metallurgical types of operations.

Briefly, the chemical operation consists of converting the zircon to a carbide form in an arc furnace, then by chlorination to zirconium tetrachloride from which the hafnium is chemically removed in reaction towers seven stories high. The residual zirconium compound is then converted by calcination to zirconium oxide, which is finally reduced to sponge zirconium using liquid magnesium in the Kroll process. In the metallurgical operations, the sponge is crushed and compressed into a billet and double-melted in a vacuum arc furnace to finally produce a 20-inch

A red-hot zirconium ingot, held in a hydraulically-operated manipulator, is forged in a giant press, changing its cylindrical shape into a proper form for rolling into bar or sheet.

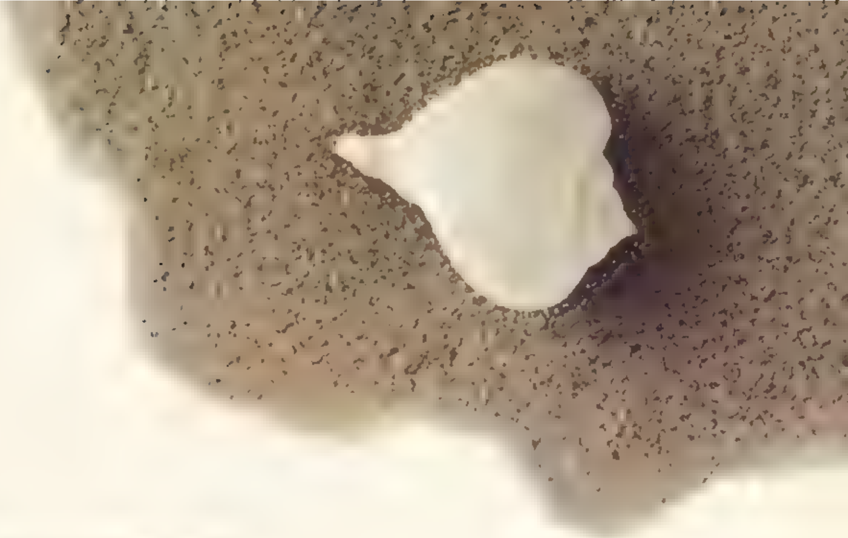
diameter zirconium ingot weighing 6000 pounds. When the sponge is crushed, 1.5% tin and smaller amounts of iron, chromium and nickel are added to produce a family of reactor grade alloys. The ingot is then machined to remove any rim or surface impurities and hot forged into the shape and size desired for rolling or drawing into the finished products.

Now in workable form for fabrication into reactor tubing, the material is ultrasonically inspected for structural flaws. Inspection also includes x-ray and spectrographic procedures in the search for density or porosity variations, inclusions, or voids, and longitudinal or transverse faults generated in the forging operation.

At this point, the extrusion billet, a cylinder about 18 inches long and nine inches in diameter with a one-inch hole through the center, is hot extruded to a tube size approximately three inches in diameter by eight feet long. Following surface conditioning and annealing, it is tube-reduced directly to final dimensions.

The finished tubing is then subjected to a battery of non-destructive and destructive tests: hydrostatic, pneumatic, eddy-current, ultrasonic, dye penetrant, expansion, flattening, burst, tensile, Rockwell hardness, corrosion, metallographic examination and chemical analysis, as well as being carefully measured for cross section uniformity to avoid variations in neutron flux. This extensive testing is necessitated by the critical end use of the tube in the reactor.

There have been eighteen nuclear power plants constructed to date, commencing in 1957 with the Shippingsport Atomic Power Station operated jointly by the Atomic Energy Commission and the Duquesne Light Company. Sixty more are scheduled by 1975; projections call for 200,000,000 kilowatts of nuclear power capacity by 1980, each ten kilowatts of which requires between one and two pounds of zirconium, at least 25% of which is expended annually as the spent fuel rods are replaced. The hafnium separated from the zirconium during its production is also refined and sold for reactor control rods, where its opacity to neutrons, 700 times that of zirconium, makes it an ideal material.



Also supplied in bar, rod, tube, foil and powder forms, zirconium sheet is coiled for shipment.

Reactor fuel is contained in zirconium tubes approximately one-half inch in diameter.

FINANCIAL STATEMENTS

1968

HIGHLIGHTS OF EIGHT YEARS OPERATIONS

Green figures are restated to reflect subsequent poolings of interests
Black figures are historical results of Teledyne, Inc., as originally reported

	1968	*1967*	*1966*
Sales and service revenues	$806,747,000 806,747,000	$713,584,000 451,060,000	$638,563,000 256,751,000
Income before Federal income taxes	78,220,000 78,220,000	54,793,000 40,745,000	48,955,000 22,185,000
Provision for Federal income taxes	37,500,000 37,500,000	25,400,000 19,000,000	22,800,000 10,150,000
Net income	40,720,000 40,720,000	29,393,000 21,745,000	26,155,000 12,035,000
Net income per share	3.22 3.22	2.44 2.25	2.26 1.66
Working capital	217,030,000 217,030,000	209,069,000 149,942,000	128,726,000 60,543,000
Total assets	604,248,000 604,248,000	489,368,000 337,703,000	415,222,000 170,369,000
Shareholders' equity	317,389,000 317,389,000	230,612,000 153,092,000	219,950,000 90,205,000
Average number of shares outstanding	12,719,269 12,719,269	11,863,474 9,909,839	11,147,839 7,281,084

Net income per share and average number of shares outstanding assume full conversion of all residual securities, and have been adjusted for the 1967 stock split and for all stock dividends including the three percent stock dividend paid January 20, 1969. Net income excludes special credits of $356,000, $1,104,000, $549,000 and $175,000 in 1965 through 1962, respectively.

1965	1964	1963	1962	1961
$504 752 000	$419 765 000	$384 866 000	$352 291 000	$266 499 000
86,504,000	38,187,000	31,925,000	10,438,000	4,491,000
41,040,000	31,569,000	24,705,000	17,601,000	6,177,000
6,502,000	2,979,000	1,505,000	344,000	133,000
19,400,000	14,700,000	11,940,000	9,127,000	3,169,000
3,100,000	1,538,000	774,000	187,000	75,000
21,640,000	16,869,000	12,765,000	8,474,000	3,008,000
3,402,000	1,441,000	731,000	157,000	58,000
1.97	1.67	1.28	0.85	0.23
0.90	0.61	0.35	0.11	0.06
108,895,000	95,152,000	83,634,000	65,662,000	57,337,000
30,803,000	14,220,000	9,263,000	2,546,000	1,614,000
329 269 000	274 446 000	250 098 000	277 381 000	170 231 000
66,544,000	35,040,000	23,901,000	10,844,000	3,731,000
171,363,000	142,241,000	127,049,000	107,459,000	93,275,000
34,765,000	13,672,000	8,629,000	3,527,000	2,477,000
10,409,264	9,422,778	9,064,887	8,633,075	8,152,299
3,692,475	2,236,233	1,832,602	1,388,019	1,011,318

TELEDYNE, INC. AND SUBSIDIARIES

1968

Consolidated Balance Sheets

October 31, 1968 and 1967

ASSETS

	1968	1967
CURRENT ASSETS:		
Cash	$ 28,584,000	$ 17,933,000
Marketable securities, at cost which approximates market	567,000	28,023,000
Receivables, less reserve	144,026,000	120,826,000
Inventories, at the lower of cost (principally first in, first out) or market, less progress billings of $38,199,000 in 1968 and $21,987,000 in 1967	159,438,000	153,758,000
Prepaid expenses	4,494,000	4,436,000
Total current assets	337,109,000	324,976,000
PROPERTY AND EQUIPMENT, at cost:		
Land	11,246,000	10,266,000
Buildings	76,982,000	52,978,000
Equipment and improvements	234,373,000	188,055,000
	322,601,000	251,299,000
Less—Accumulated depreciation and amortization	152,111,000	112,451,000
	170,490,000	138,848,000
OTHER ASSETS:		
Investment in and advances to unconsolidated subsidiary (Note 1)	60,965,000	1,604,000
Cost in excess of net assets of purchased businesses	20,944,000	10,959,000
Other	14,740,000	12,981,000
	96,649,000	25,544,000
	$604,248,000	$489,368,000

The accompanying notes are an integral part of these balance sheets.

LIABILITIES

	1968	1967
CURRENT LIABILITIES:		
Notes payable	$ 12,610,000	$ 18,014,000
Current portion of long-term debt and subordinated debentures	4,257,000	3,161,000
Accounts payable	38,148,000	41,559,000
Accrued liabilities	44,545,000	39,755,000
Federal income taxes	20,519,000	13,418,000
Total current liabilities	120,079,000	115,907,000
LONG-TERM DEBT AND RESERVES:		
Long-term debt (Note 3)	80,085,000	57,354,000
Reserve for deferred Federal income taxes	3,756,000	2,229,000
Reserve for employee pension benefits (Note 7)	7,318,000	7,156,000
CONVERTIBLE SUBORDINATED DEBENTURES (Note 3)	75,621,000	76,110,000
SHAREHOLDERS' EQUITY:		
Preferred stock (Notes 5 and 8)	710,000	869,000
Common stock (Notes 3, 4, 5, and 8)	11,240,000	10,202,000
Additional paid-in capital	206,778,000	127,775,000
Retained earnings (Notes 3 and 5)	98,661,000	91,766,000
Total shareholders' equity	317,389,000	230,612,000
	$604,248,000	$489,368,000

TELEDYNE, INC. AND SUBSIDIARIES

1968

Consolidated Statements of Income

For the Years Ended October 31, 1968 and 1967

	1968	*1967*
SALES AND SERVICE REVENUES	$806,747,000	$713,584,000
EQUITY IN NET INCOME OF UNCONSOLIDATED SUBSIDIARY (Note 1)	3,272,000	—
	810,019,000	713,584,000
COSTS AND EXPENSES:		
Cost of sales and services	609,823,000	549,206,000
Selling and administrative expenses	114,665,000	102,580,000
Interest expense	7,311,000	7,005,000
	731,799,000	658,791,000
INCOME BEFORE FEDERAL INCOME TAXES	78,220,000	54,793,000
PROVISION FOR FEDERAL INCOME TAXES	37,500,000	25,400,000
NET INCOME	$ 40,720,000	$ 29,393,000
NET INCOME PER SHARE (Note 2)	$3.31	$2.51
NET INCOME PER SHARE, **adjusted for 3% stock dividend payable January, 1969**	$3.22	$2.44

Costs and expenses include provisions of $20,318,000 in 1968 and $17,433,000 in 1967 for depreciation and amortization of property and equipment

Consolidated Statements of Retained Earnings

For the Years Ended October 31, 1968 and 1967

	1968	*1967*
BALANCE BEGINNING OF PERIOD (Note 1)	$ 91,766,000	$100,137,000
ADD OR (DEDUCT):		
Net income	40,720,000	29,393,000
Fair value of common stock dividends (Note 5)	(29,642,000)	(29,355,000)
Cash dividends paid or accrued on preferred stock	(2,105,000)	(2,498,000)
Dividends paid by pooled businesses prior to pooling	(1,875,000)	(3,983,000)
Cost of treasury stock of pooled businesses prior to pooling	(203,000)	(660,000)
Net income or loss of pooled businesses for periods excluded from or duplicated in the consolidated statements of income	—	(1,268,000)
BALANCE, END OF PERIOD	$ 98,661,000	$ 91,766,000

The accompanying notes are an integral part of these statements.

Consolidated Statements of Additional Paid-In Capital

For the Years Ended October 31, 1968 and 1967

	1968	1967
BALANCE, BEGINNING OF PERIOD (Note 1)	$127,775,000	$ 81,278,000
ADD OR (DEDUCT):		
Difference between fair value and par value of common stock dividends (Note 5)	29,356,000	29,071,000
Difference between fair value and par value of common stock issued in connection with purchases of businesses	42,613,000	8,674,000
Difference between proceeds and par value of common stock issued under stock option plans (Note 4), employees' stock purchase plans and convertible debentures	1,765,000	4,140,000
Proceeds from sale of warrants	3,750,000	—
Difference between proceeds or fair value and par value of capital stock issued by pooled businesses prior to pooling	1,616,000	5,550,000
Transfers to common stock in connection with two-for-one common stock split in 1967 and conversions of preferred stock	(97,000)	(938,000)
BALANCE, END OF PERIOD	$206,778,000	$127,775,000

The accompanying notes are an integral part of these statements.

Auditors' Report

To the Shareholders and Board of Directors, Teledyne, Inc.:

We have examined the consolidated balance sheets of TELEDYNE, INC. (a Delaware corporation) and subsidiaries as of October 31, 1968 and 1967, and the related statements of income, additional paid-in capital, and retained earnings for the years then ended. We have also examined the consolidated balance sheet of Teledyne United Corporation and subsidiaries as of October 31, 1968, and the related statement of income for the year then ended. Our examinations were made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. We did not examine the consolidated financial statements of Unicoa Corporation and subsidiary which are summarized in Note 6 to the financial statements; however, we were furnished with the reports of other auditors thereon.

In our opinion, based upon our examinations and the reports of other auditors referred to above, the accompanying consolidated financial statements present fairly the consolidated financial position of Teledyne, Inc. and subsidiaries as of October 31, 1968 and 1967, and of Teledyne United Corporation and subsidiaries as of October 31, 1968, and the results of their operations for the years then ended, all in conformity with generally accepted accounting principles consistently applied during the periods.

ARTHUR ANDERSEN & CO.

Los Angeles, California,
November 25, 1968.

Teledyne United Corporation and Subsidiaries

Consolidated Balance Sheet

October 31, 1968

ASSETS:

Cash	$ 863,000
Time Deposit, redeemable in 1975	10,000,000
Marketable Securities, at cost which approximates market	7,876,000
Installment Loans Receivable, less reserve	47,701,000
Investment In Unicoa Corporation (a 51.7% interest), at cost plus equity in undistributed net income	142,438,000
Cost In Excess Of Net Assets Of Purchased Business	4,854,000
Other Assets	6,996,000
	$220,728,000

LIABILITIES:

Notes Payable To Banks	$ 45,000,000
Investment Certificates	44,515,000
Accounts Payable, Accrued Taxes And Other Liabilities	3,343,000
Long-Term Debt, 7%, due 1973 to 1975	22,500,000
Subordinated Debentures, 6½%, due in annual installments from 1979 to 1983	37,500,000
Deferred Income	6,905,000
Teledyne, Inc. Equity:	
Advances	48,907,000
Capital stock and additional paid-in capital	8,786,000
Retained earnings	3,272,000
	$220,728,000

Consolidated Statement of Income

For the Year Ended October 31, 1968

Equity In Net Income Of Unicoa Corporation	$ 6,301,000
Interest Earned And Other Income	741,000
	7,042,000
Expenses:	
Operating expenses	418,000
Interest expense, less Federal income tax benefit of $2,947,000	3,310,000
Provision for Federal income taxes of consolidated subsidiaries	42,000
Net Income	$ 3,272,000

The accompanying notes are an integral part of these statements.

TELEDYNE, INC. AND SUBSIDIARIES

1968

Notes to Consolidated Financial Statements

October 31, 1968

NOTE 1 — *Principles of consolidation:* The consolidated financial statements include the accounts of the Company and all of its subsidiaries, except Teledyne United Corporation. The Company's investment in and advances to Teledyne United Corporation are carried at cost plus equity in undistributed net income. Consolidated financial statements of Teledyne United and subsidiaries are included herein.

The 1967 financial statements have been restated to include businesses acquired during 1968 and accounted for as poolings of interests. The results of operations of purchased businesses are included in the financial statements of Teledyne, Inc. and Teledyne United Corporation since acquisition.

NOTE 2—*Net income per share:* The computation of net income per share is based on the average number of shares outstanding during each year after giving recognition to the assumed conversion of residual securities ($3 50 and Series B preferred stocks and 3½% and 5½% convertible subordinated debentures) No material dilution of net income per share would result from the assumed exercise of outstanding stock options and warrants or the conversion of nonresidual preferred stock and convertible debentures.

NOTE 3 — *Long-term debt and convertible subordinated debentures:*

Long-term debt—	
6½% Sinking Fund Debentures due 1992, $1,350,000 payable annually commencing in 1972	$30,000,000
7% Promissory Notes due 1989, $750,000 payable in 1973 and $1,500,000 payable annually commencing in 1974	25,000,000
5¾% Promissory Notes due 1981, $410,000 payable annually commencing in 1969	5,000,000
Other (including $7,779,000 secured by land and buildings) due in various installments to 1984	24,025,000
	84,025,000
Less—Current portion	3,940,000
	$80,085,000
Convertible subordinated debentures—	
3½%, due 1992, $3,000,000 payable annually commencing in 1978, convertible into common stock at $117.96 per share	$59,828,000
4%, due 1971, convertible into common stock at $149.51 per share	8,500,000
5½%, $317,000 payable annually from 1969 to 1981, convertible into common stock at $53.94 per share	7,610,000
	75,938,000
Less—Current portion	317,000
	$75,621,000

Under the various borrowing agreements, the Company has agreed to maintain minimum amounts of working capital and net worth, and has agreed to certain restrictions with respect to borrowings, purchase and sale of assets and capital stock and payment of dividends. At October 31, 1968, these agreements were complied with and retained earnings of $30,945,000 were not restricted as to payment of dividends.

The Company has reserved 705,100 shares of common stock for issuance upon conversion of the subordinated debentures.

NOTE 4 — *Stock options and warrants:* At October 31, 1968, 194,379 common shares (of which 72,660 were exercisable) were reserved for issuance under outstanding options at prices from $10 to $123 per share and 77,314 common shares were reserved for the granting of additional options. At October 31, 1967, 216,032 common shares were reserved for issuance under outstanding options and 125,113 common shares were reserved for the granting of additional options. During 1968, options to purchase 54,038 common shares were granted; options to purchase 69,452 shares were exercised; and options covering 6,239 shares expired or were canceled.

At October 31, 1968, 7,636 shares of common stock were reserved for issuance under warrants assumed in connection with the acquisition of businesses. In addition, 170,625 shares of common stock were reserved for issuance under warrants which provide for the purchase of the Company's common stock at $110 per share after May 1, 1969.

1968

NOTE 5 — *Capital stock:*	*1968*	*1967*
Cumulative Convertible Preferred Stock, $1 par value, authorized 5,000,000 shares		
$6 series, outstanding 174,375 shares in 1968 and 140,973 shares in 1967	$ 174,000	$ 141,000
$3 50 series, outstanding 265,382 shares in 1968 and 348,678 shares in 1967	265 000	349,000
Series B, outstanding 247,440 shares in 1968 and 348,603 shares in 1967	248,000	349,000
Series C, outstanding 23,064 shares in 1968 and 30,000 shares in 1967	23,000	30,000
	710,000	869,000
Common stock, $1 par value, authorized 20,000,000 shares; outstanding 11,240,380 shares in 1968 and 10,201,736 shares in 1967	11,240,000	10,202,000

The holders of the $6 series preferred stock are entitled to voting rights, cumulative annual dividends at the rate of $6.00 per share, and preference of $63 per share ($10,986,000 at October 31, 1968) in liquidation. Such stock is redeemable at $100 per share after April 22, 1978, and is convertible at any time into 0.67 shares of common stock. The holders of the $3 50 series preferred stock are entitled to voting rights, cumulative annual dividends at the rate of $3.50 per share, and preference of $60 per share ($15 923,000 at October 31, 1968) in liquidation. Such stock is redeemable at $100 per share after June 30, 1971, and is convertible at any time into two shares of common stock The holders of the Series B preferred stock are entitled to voting rights, cumulative annual dividends at the rate of $0 80 per share through June 2, 1969, $1.60 per share thereafter through June 2, 1971, and $3.20 per share thereafter. Such stock is entitled to preference of $16 per share ($3,959,000 at October 31, 1968) in liquidation, is redeemable at $80 per share after August 29, 1970, and is convertible at anytime into 1.066 shares of common stock. The holders of the Series C preferred stock are entitled to voting rights, cumulative annual dividends at the rate of $6.00 per share, and preference of $82.50 per share ($1,903,000 at October 31, 1968) in liquidation. Such stock is redeemable at $100 per share after January 25, 1973, and is convertible at any time into a maximum of one share of common stock. The Company has reserved 934,000 shares of common stock for conversion of all preferred shares.

At October 31, 1968, 29,800 shares of $3.50 preferred stock and 123,200 shares of common stock were reserved for issuance to employees under stock purchase plans.

NOTE 6 — *Unicoa Corporation and subsidiary:* The following condensed statements summarize the consolidated financial position and operating results of Unicoa Corporation and subsidiary, United Insurance Company of America:

BALANCE SHEETS	*September 30, 1968*	*December 31, 1967*
ASSETS:		
Bonds, at amortized cost	$117,087,000	$ 98,512,000
Corporate stocks, at cost	36,063,000	30,554,000
Mortgage loans	160,317,000	156,105,000
Real estate, at cost, less accumulated depreciation	37,121,000	37,683,000
Loans to policyholders	8,715,000	7,584,000
Cash	4,992,000	2,961,000
Other assets	28,192,000	13,990,000
	$392,487,000	$347,389,000
LIABILITIES AND SHAREHOLDERS' EQUITY:		
Policy reserves and liabilities	$274,628,000	$241,844,000
Mortgage loan payable	12,312,000	12,649,000
Other liabilities	27,116,000	22,028,000
Shareholders' equity—		
Common stock	18,711,000	18,704,000
Additional paid-in capital	1,945,000	1,898,000
Retained earnings	57,775,000	50,266,000
Total shareholders' equity	78,431,000	70,868,000
	$392,487,000	$347,389,000

STATEMENTS OF INCOME AND RETAINED EARNINGS

	Nine Months Ended September 30, 1968	*Year Ended December 31, 1967*
INCOME:		
Premiums and other insurance income	$116,832,000	$136,611,000
Investment income less expenses	11,101,000	13,304,000
Other income	1,576,000	1,617,000
	129,509,000	151,532,000
EXPENSES:		
Benefits paid or provided	56,834,000	65,231,000
Insurance expenses	57,249,000	69,028,000
Provision for Federal income taxes	3,390,000	3,715,000
	117,473 000	137,974,000
	12,036,000	13,558,000
Net realized capital losses	38,000	613,000
NET INCOME	11,998,000	12,945,000
Retained earnings at beginning of period	50,266,000	43,306,000
	62,264,000	56,251,000
Cash dividends	4,489,000	5,985,000
RETAINED EARNINGS AT END OF PERIOD	$ 57,775,000	$ 50,266,000

The above statements have been prepared on the basis of generally accepted accounting principles which differ in certain respects from statutory accounting practices for life insurance companies.

Included in the consolidated retained earnings of Unicoa Corporation at September 30, 1968, is the sum of $24,650,000 (at current tax rates) for possible Federal income taxes which might become due, in whole or in part, in any future taxable year in which certain parts of the companies' gains from operations since January 1, 1959, presently included in retained earnings, are paid out in cash dividends Under existing circumstances, the insurance companies do not intend to pay any such taxable cash dividends in the foreseeable future.

NOTE 7 *Commitments and contingent liabilities:* Annual rentals under long-term leases expiring between 1971 and 1984, are approximately $3,300,000 through 1973, and $1,000,000 thereafter.

The long-term debt and bank indebtedness of Teledyne United Corporation are guaranteed by Teledyne, Inc and the subordinated debt of Teledyne United is guaranteed on a subordinated basis by Teledyne, Inc.

The Company charges pension costs to operations at amounts equal to normal cost and interest on past service costs plus, for certain plans, a portion of past service costs. Such charges for the years ended October 31, 1968 and 1967, were approximately $5,657,000 and $5,284,000, respectively The Company contributes to trust funds the actuarial value of pension benefits commencing upon the employees' retirement or annual amounts equal to normal cost plus interest plus a portion of past service costs. The actuarial value of vested benefits exceeded the total of the pension funds and amounts accrued under certain plans at October 31, 1968, by approximately $15,000,000. The Company had made all contributions required by the plans through October 31, 1968.

NOTE 8 — *Subsequent events:* Subsequent to October 31, 1968, the Company acquired approximately 96 percent of the outstanding stock of The Ryan Aeronautical Co for approximately $123 800,000. In addition, the Company has exchanged or has conditionally agreed to exchange approximately 356,000 shares of $6 preferred stock, 624,000 shares of $3 50 preferred stock, and 218,000 shares of common stock for certain other businesses.

In November, 1968, the Board of Directors declared a 3 percent common stock dividend payable January 20, 1969, to shareholders of record December 6, 1968 In addition, the Board voted to increase the number of authorized shares, to split the common stock 2 for 1, and to reserve additional shares for stock options for key employees, subject to shareholders' approval If approved, the stock split will be payable March 24, 1969, to shareholders of record February 24, 1969. The financial statements and related notes have not been adjusted to reflect these events.

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45 Wall Street

New York, New York 10005

REGISTRARS

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124 Fourth Street

Los Angeles, California 90013

First National City Bank

111 Wall Street

New York, New York 10015